

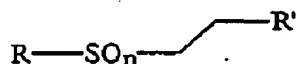
Application No.: 09/743,746
 Attorney Docket No.: 068800-0276611

Amendments to the Claims

This listing of claims replaces all prior versions and listings of the claims in this application.

1. (Currently Amended) A method for ~~characterising~~ characterizing an analyte, ~~which method comprises~~ comprising the steps of:

- (a) providing a compound in which the analyte is attached by a cleavable linker to a reporter group relatable to the analyte, the compound having the following formula:



wherein either R comprises the reporter group and R' comprises the analyte, or R comprises the analyte and R' comprises the reporter group; wherein R' is selected from the group consisting of -S-, -SO-, -NR¹, and -O- between the C atom that is in the β-position to the SO_n group and the reporter group or analyte, wherein R¹ is a hydrogen atom, a halogen atom, or a substituent containing a carbonyl group, a halogen atom, or both; and wherein n is 1 or 2;

- (b) cleaving the reporter group from the analyte; and
 (c) identifying the reporter group by mass spectrometry and determining the mass-to-charge ratio of the reporter, thereby characterising characterizing the analyte.

2. (Original) A method according to claim 1, wherein R and/or R' comprise a covalent linkage attaching the analyte and/or reporter group to the cleavable linker.

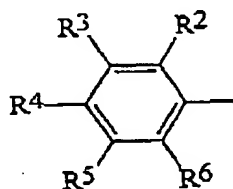
3. (Withdrawn) A method according to claim 2, wherein the covalent linkage is independently selected from a -CO-NH- group, an -NH-CO-NH- group, an -NH-CS-NH- group, a -CH₂-NH- group, a SO₂-NH- group, a -NH-CH₂-CH₂- group, or an -OP(=O)(O)O- group.

Application No.: 09/743,746
Attorney Docket No.: 068800-0276611

4. (Original) A method according to any preceding claim, wherein R comprises, between the SO_n group and the reporter group or analyte, a substituted or unsubstituted aromatic cyclic group, aliphatic cyclic group, or heterocyclic group.

5. (Currently Amended) A method according to claim 4, wherein R comprises, between the SO_n group and the reporter group or analyte, a substituted or unsubstituted group selected from the group consisting of phenyl, pyridyl, pyranyl, naphthyl, anthracyl, pyrenyl, or and fused ring derivatives or heteroaromatic analogues of the above.

6. (Currently Amended) A method according to claim 5, wherein the phenyl group is a group having the following formula:



wherein one of R²-R⁶ comprises the reporter group or analyte, and the remaining R²-R⁶ groups are independently selected from the group consisting of a hydrogen, deuterium, fluorine, and a substituent, such as a D, F, methyl, a methoxy group, a hydroxy group or and an amino group.

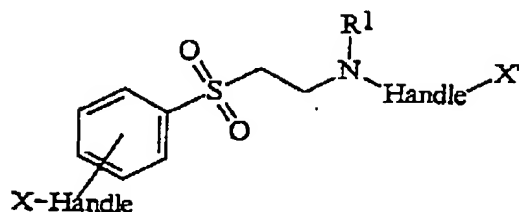
7. (Cancelled)

8. (Currently Amended) A method according to claim 7 1, wherein the R¹ group is an electron withdrawing group.

9. (Cancelled)

10. (Currently Amended) A method according to claim 9 1, wherein R¹ is a fluorine atom, a chlorine atom, a bromine atom, an iodine atom, a trifluoroacetyl group, or a trifluoromethyl acetate group.

11. (Original) A method according to claim 1, wherein the compound has the following formula:



wherein R^1 is an electron withdrawing substituent, X comprises the reporter group and X' comprises the analyte, or X comprises the analyte and X' comprises the reporter group, and each Handle is the same or different, being either a single bond directly attaching the X groups to the phenyl ring and the N atom respectively, or a reactive group capable of attaching the X groups to the phenyl ring and the N atom respectively.

12. (Currently Amended) A method according to claim ~~11~~ 12, wherein R^1 is selected from a hydrogen atom, a halogen atom, or a substituent comprising a carbonyl group and/or halogen atom.

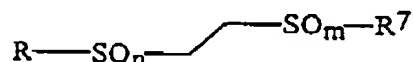
13. (Currently Amended) A method according to claim 11 or claim ~~12 or 13~~, wherein each Handle is independently selected from a $-\text{CO-NH}-$ group, an $-\text{NH-CO-NH}-$ group, an $-\text{NH-CS-NH}-$ group, a $-\text{CH}_2\text{-NH}-$ group, a $\text{SO}_2\text{-NH}-$ group, a $-\text{NH-CH}_2\text{-CH}_2-$ group, or an $-\text{OP(=O)(O)O}-$ group.

14. (Withdrawn) A method according to any preceding claim, wherein the analyte comprises a biological molecule.

15. (Withdrawn) A method according to claim 14, wherein the biological molecule is selected from a protein, a polypeptide, an amino acid, a nucleic acid, a nucleic acid base, a pharmaceutical agent or drug, a carbohydrate, a lipid, a natural product and a synthetic compound from an encoded chemical library.

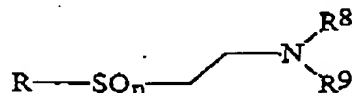
16. (Withdrawn) A compound according to claim 15, wherein the nucleotide, oligonucleotide or nucleic acid is natural, or is modified by modifying a base, sugar and/or backbone of the nucleotide, oligonucleotide or nucleic acid.

17. (Withdrawn) A method according to claim 15 or claim 16, wherein the analyte is an amino acid or a peptide comprising a cysteine group, and the compound is of the formula:



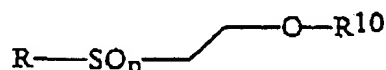
wherein m is 0 or 1 and the S atom attaching R^7 to the linker is the sulphur atom of the cysteine group, R^7 being the remainder of the amino acid or polypeptide.

18. (Withdrawn) A method according to claim 15 or claim 16, wherein the analyte is an amino acid or peptide, and the compound is of the formula:



wherein the N atom is the nitrogen atom of an epsilon amino group of a lysine group, or is the nitrogen atom of an N-terminal alpha amino group, R^8 is selected from H, O or an N-protective group, R^9 being the remainder of the amino acid or polypeptide.

19. (Withdrawn) A method according to claim 15 or 16, wherein the analyte is an amino acid or a peptide comprising a serine, threonine and/or tyrosine group, and the compound is of the formula:



wherein the O atom is the oxygen atom from a hydroxyl group of the serine, threonine or tyrosine group, R¹⁰ being the remainder of the amino acid or polypeptide.

20. (Currently Amended) A method according to ~~any preceding~~ claim 1, wherein the reporter group comprises a mass marker detectable by mass spectrometry.

21. (Original) A method according to claim 20, wherein the mass marker comprises an oligoether or a polyether.

22. (Original) A method according to claim 21, wherein the oligoether or polyether is a substituted or unsubstituted oligo- or poly-arylether.

23. (Withdrawn) A method according to claim 21 or claim 22, wherein the oligoether or polyether comprises one or more fluorine atom or methyl group substituents, or one or more ²H or ¹³C isotopic substituents.

24. (Withdrawn) A method according to any of claims 20-23, wherein the mass marker comprises a metal ion-binding moiety.

25. (Withdrawn) A method according to claim 24, wherein the metal ion-binding moiety is a porphyrin, a crown ether, hexahistidine, or a multidentate ligand.

26. (Withdrawn) A method according to claim 25, wherein the metal ion-binding moiety is a bidentate ligand or is EDTA.

27. (Withdrawn) A method according to any of claims 24-26, wherein the metal ion-binding moiety is bound to a monovalent, divalent, or trivalent metal ion.

28. (Withdrawn) A method according to claim 27, wherein the metal ion is a transition metal ion, or a metal ion of group Ia, IIA or IIIA of the periodic table.

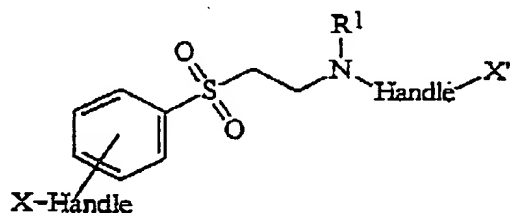
29. (Withdrawn) A method according to claim 28, wherein the metal ion is Ni²⁺, Li⁺, Na⁺, K⁺, Mg²⁺, Ca²⁺, Sr²⁺, Ba²⁺, or Al³⁺.

30. (Withdrawn) A method according to any preceding claim, which method further comprises heating the linker to cleave off the reporter group.

31. (Original) A method according to any preceding claim 1, wherein the reporter group is a mass marker and the method further comprises cleaving off the mass marker in the mass spectrometer.

32-34. (Cancelled).

35. (Withdrawn) A compound having the following formula:



wherein R^1 is an electron withdrawing substituent, X comprises the reporter group and X' comprises the analyte, or X comprises the analyte and X' comprises the reporter group, and each Handle is the same or different, being either single bond directly attaching the X groups to the phenyl ring and the N atom respectively, or a reactive group capable of attaching the X groups to the phenyl ring and the N atom respectively.

36. (Withdrawn) A compound according to claim 35, wherein R^1 is selected from a hydrogen atom, a halogen atom, or a substituent comprising a carbonyl group and/or halogen atom.

37. (Withdrawn) A compound according to claim 35 or claim 36, wherein each Handle is independently selected from a -CO-NH- group, an -NH-CO-NH- group, an -NH-CS-NH- group, a -CH₂-NH- group, a SO₂-NH- group, a -NH-CH₂-CH₂- group, or an -OP(=O)(O)O- group.

Application No.: 09/743,746
Attorney Docket No.: 068800-0276611

38. (Withdrawn) A compound according to any of claims 35-37, wherein the analyte is as defined in any of claims 14-19.

39. (Withdrawn) A compound according to any of claims 35-38, wherein the reporter is as defined in any of claims 20-29.